

CLAIMS**We claim:**

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1. A method for determining a location of a mobile unit, comprising:
measuring a wireless signal strength; comparing the measured wireless signal strength to
5 a table of wireless signal strengths and known locations of the mobile unit; finding a table
entry whose wireless signal strength is closest, by distance in signal space, to the
measured wireless signal strength; and, determining the location of the mobile unit with
reference to the found table entry.

10 2. The method of claim 1 wherein the determining the location of the mobile
unit with reference to the found table entry includes determining the location of the
mobile unit to be proximate to a known location corresponding to the found table entry.

15 3. The method of claim 1 wherein the finding the table entry whose wireless
signal strength is most similar to the measured wireless signal strength includes finding a
plurality of table entries and wherein the determining the location of the mobile unit with
reference to the found table entry includes determining the location of the mobile unit to
be proximate to a spatial average of known locations corresponding to the found plurality
of table entries.

20 4. The method of claim 3 wherein the determining the location of the mobile
unit to be proximate to a spatial average of known locations corresponding to the found

plurality of table entries includes multiplying each known location by a weighting factor prior to the spatial averaging of the known locations.

5 5. The method of claim 1 wherein measuring the wireless signal strength includes measuring, at the mobile unit, a wireless signal strength of a base station, and wherein the table of wireless signal strengths and known locations of the mobile unit includes the wireless signal strength of the base station.

10 6. The method of claim 5 wherein the table of wireless signal strengths and known locations of the mobile unit is generated by a method comprising the steps of: measuring, at the mobile unit in a known location, the wireless signal strength of the base station; and entering, as an entry in the table, the known location and the measured wireless signal strength of the base station.

15 7. The method of claim 6 wherein the measuring of the wireless signal strength of the base station includes measuring, at the mobile unit in the known location, the wireless signal strength of the base station in a plurality of orientations of the mobile unit.

20 8. The method of claim 5 wherein the table of wireless signal strengths and known locations of the mobile unit is generated by a method comprising the steps of: mathematically estimating, at the mobile unit in a known location, the wireless signal

strength of the base station; and entering, as an entry in the table, the known location and the mathematically estimated wireless signal strength of the base station.

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9. The method of claim 8 wherein the mathematically estimating, at the mobile unit in the known location, the wireless signal strength of the base station includes determining a reference wireless signal strength of the base station at a reference distance from the base station.

10. The method of claim 8 wherein the mathematically estimating, at the mobile unit in the known location, the wireless signal strength of the base station includes determining a distance between the base station and the known location.

11. The method of claim 8 wherein the mathematically estimating, at the mobile unit in the known location, the wireless signal strength of the base station includes determining an existing number of walls between the base station and the known location and determining a wall attenuation factor.

12. The method of claim 11 wherein the determining the existing number of walls between the base station and the known location includes using a line clipping algorithm.

14. The method of claim 1 wherein measuring the wireless signal strength includes measuring, at a base station, a wireless signal strength of the mobile unit, and wherein the table of wireless signal strengths and known locations of the mobile unit includes the wireless signal strength of the mobile unit.

16. The method of claim 15 wherein the measuring of the wireless signal strength of the mobile unit in the known location includes measuring, at the base station, the wireless signal strength of the mobile unit in a plurality of orientations at the known location.

17. The method of claim 14 wherein the table of wireless signal strengths and known locations of the mobile unit is generated by a method comprising the steps of: mathematically estimating, at the base station, the wireless signal strength of the mobile

unit in a known location; and entering, as an entry in the table, the known location and the mathematically estimated wireless signal strength of the mobile unit in the known location.

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18. The method of claim 17 wherein the mathematically estimating, at the base station, the wireless signal strength of the mobile unit in the known location includes determining a reference wireless signal strength of the mobile unit in the known location at a reference distance from the mobile unit in the known location.

10 19. The method of claim 17 wherein the mathematically estimating, at the base station, the wireless signal strength of the mobile unit in the known location includes determining a distance between the base station and the known location.

20. The method of claim 17 wherein the mathematically estimating, at the
15 base station, the wireless signal strength of the mobile unit in the known location includes determining an existing number of walls between the base station and the known location and determining a wall attenuation factor.

20 21. The method of claim 20 wherein the determining the existing number of walls between the base station and the known location includes using a line clipping algorithm.

5 ~~23.~~ A computer-readable medium having computer-executable instructions for
performing steps, comprising: measuring a wireless signal strength; comparing the
measured wireless signal strength to a table of wireless signal strengths and known
locations of the mobile unit; finding a table entry whose wireless signal strength is
closest, by distance in signal space, to the measured wireless signal strength; and,
0 determining the location of the mobile unit with reference to the found table entry.

24. The computer-readable medium of claim 23 wherein the determining the location of the mobile unit with reference to the found table entry includes determining the location of the mobile unit to be proximate to a known location corresponding to the found table entry.

25. The computer-readable medium of claim 23 wherein the finding the table entry whose wireless signal strength is most similar to the measured wireless signal strength includes finding a plurality of table entries and wherein the determining the location of the mobile unit with reference to the found table entry includes determining the location of the mobile unit to be proximate to a spatial average of known locations corresponding to the found plurality of table entries.

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30. The computer-readable medium of claim 27 wherein the table of wireless signal strengths and known locations of the mobile unit is generated by computer-executable instructions for performing steps, comprising: mathematically estimating, at the mobile unit in a known location, the wireless signal strength of the base station; and
- 5 entering, as an entry in the table, the known location and the mathematically estimated wireless signal strength of the base station.

31. The computer-readable medium of claim 30 wherein the mathematically estimating, at the mobile unit in the known location, the wireless signal strength of the
- 10 base station includes determining a reference wireless signal strength of the base station at a reference distance from the base station.

32. The computer-readable medium of claim 30 wherein the mathematically estimating, at the mobile unit in the known location, the wireless signal strength of the
- 15 base station includes determining a distance between the base station and the known location.

33. The computer-readable medium of claim 30 wherein the mathematically estimating, at the mobile unit in the known location, the wireless signal strength of the
- 20 base station includes determining an existing number of walls between the base station and the known location and determining a wall attenuation factor.

34. The computer-readable medium of claim 33 wherein the determining the existing number of walls between the base station and the known location includes using a line clipping algorithm.

5 35. The computer-readable medium of claim 33 wherein the determining the existing number of walls between the base station and the known location includes determining a practical limit number of walls between the base station and the known location.

10 36. The computer-readable medium of claim 23 wherein measuring the wireless signal strength includes measuring, at a base station, a wireless signal strength of the mobile unit, and wherein the table of wireless signal strengths and known locations of the mobile unit includes the wireless signal strength of the mobile unit.

15 37. The computer-readable medium of claim 36 wherein the table of wireless signal strengths and known locations of the mobile unit is generated by computer-executable instructions for performing steps, comprising: measuring, at the base station, the wireless signal strength of the mobile unit in a known location; and entering, as an entry in the table, the known location and the measured wireless signal strength of the
20 mobile unit in the known location.

38. The computer-readable medium of claim 37 wherein the measuring of the wireless signal strength of the mobile unit in the known location includes measuring, at

the base station, the wireless signal strength of the mobile unit in a plurality of orientations at the known location.

39. The computer-readable medium of claim 36 wherein the table of wireless
5 signal strengths and known locations of the mobile unit is generated by computer-executable instructions for performing steps, comprising: mathematically estimating, at the base station, the wireless signal strength of the mobile unit in a known location; and entering, as an entry in the table, the known location and the mathematically estimated wireless signal strength of the mobile unit in the known location.

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40. The computer-readable medium of claim 39 wherein the mathematically
estimating, at the base station, the wireless signal strength of the mobile unit in the known
location includes determining a reference wireless signal strength of the mobile unit in the
known location at a reference distance from the mobile unit in the known location.

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41. The computer-readable medium of claim 39 wherein the mathematically
estimating, at the base station, the wireless signal strength of the mobile unit in the known
location includes determining a distance between the base station and the known location.

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42. The computer-readable medium of claim 39 wherein the mathematically
estimating, at the base station, the wireless signal strength of the mobile unit in the known
location includes determining an existing number of walls between the base station and
the known location and determining a wall attenuation factor.

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